

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (currently amended): A wireless transmit/receive unit (WTRU) comprising:

(a) a radio receiver comprising a plurality of analog receiver components;  
(b) a radio transmitter comprising a plurality of analog transmitter components;

(c) at least one controller; ~~and~~

(d) a plurality of compensation modules in communication with the controller, the modules for correcting radio frequency (RF) parameter deficiencies that exist in at least one of the radio receiver and the radio transmitter, whereby RF parameter requirements established for one or more of the analog receiver and transmitter components are relaxed;

(e) at least one digital gain control circuit in communication with the radio receiver, wherein the digital gain control circuit enhances dynamic range of the radio receiver and compensates for channel loss variation, the digital gain control circuit comprising:

(i) at least one logarithmic amplifier for compressing the dynamic range of analog signals received from the radio receiver to adjust the dynamic range of the analog signals;

(ii) at least one analog to digital converter (ADC) in communication with the logarithmic amplifier, the ADC for digitizing an output of the logarithmic amplifier; and

(iii) at least one look up table (LUT) in communication with the ADC, wherein the LUT provides anti-logarithmic functionality in order to decipher the digital domain output by the ADC; and

(f) at least one low pass filter (LPF) in communication with the digital gain control circuit and at least one of the compensation modules, wherein the analog receiver components are introduced to a digital domain established to enhance the performance characteristics of the radio receiver.

Claims 2-24 (canceled)

25. (currently amended): A wireless communications system comprising:

(a) a radio receiver comprising a plurality of analog receiver components;  
(b) a radio transmitter comprising a plurality of analog transmitter components; and

(c) at least one digital baseband (DBB) compensation processor including a plurality of radio frequency (RF) compensation modules for correcting RF parameter deficiencies that exist in at least one of the radio receiver and the radio transmitter, whereby RF parameter requirements established for one or more of the analog receiver and transmitter components are relaxed;

(d) at least one digital gain control circuit in communication with the radio receiver, wherein the digital gain control circuit enhances dynamic range of the radio receiver and compensates for channel loss variation, the digital gain control circuit comprising:

(i) at least one logarithmic amplifier for compressing the dynamic range of analog signals received from the radio receiver to adjust the dynamic range of the analog signals;

(ii) at least one analog to digital converter (ADC) in communication with the logarithmic amplifier, the ADC for digitizing an output of the logarithmic amplifier; and

(iii) at least one look up table (LUT) in communication with the ADC, wherein the LUT provides anti-logarithmic functionality in order to decipher the digital domain output by the ADC; and

(e) at least one low pass filter (LPF) in communication with the digital gain control circuit and at least one of the compensation modules, wherein the analog receiver components are introduced to a digital domain established to enhance the performance characteristics of the radio receiver.

Claims 26-37 (canceled)

38. (currently amended): An integrated circuit (IC) for use in a wireless communication system including a radio receiver comprising a plurality of analog receiver components, and a radio transmitter comprising a plurality of analog transmitter components, the IC comprising:

(a) at least one controller; ~~and~~

(b) a plurality of compensation modules in communication with the controller, the modules for correcting radio frequency (RF) parameter deficiencies that exist in at least one of the radio receiver and the radio transmitter, whereby RF parameter requirements established for one or more of the analog receiver and transmitter components are relaxed;

(c) at least one digital gain control circuit in communication with the radio receiver, wherein the digital gain control circuit enhances dynamic range of the radio receiver and compensates for channel loss variation, the digital gain control circuit comprising:

(i) at least one logarithmic amplifier for compressing the dynamic range of analog signals received from the radio receiver to adjust the dynamic range of the analog signals;

(ii) at least one analog to digital converter (ADC) in communication with the logarithmic amplifier, the ADC for digitizing an output of the logarithmic amplifier; and

(iii) at least one look up table (LUT) in communication with the ADC, wherein the LUT provides anti-logarithmic functionality in order to decipher the digital domain output by the ADC; and

(d) at least one low pass filter (LPF) in communication with the digital gain control circuit and at least one of the compensation modules, wherein the analog receiver components are introduced to a digital domain established to enhance the performance characteristics of the radio receiver.

Claims 39-50 (canceled)